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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,951	04/13/2004	Francis W. Daly JR.	543-99-036 CIP	5451
128	7590	04/30/2009	EXAMINER	
HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			WEST, JEFFREY R	
ART UNIT	PAPER NUMBER			
		2857		
MAIL DATE	DELIVERY MODE			
04/30/2009	PAPER			

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* FRANCIS W. DALY, JR.

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Appeal 2009-1312  
Application 10/823,951  
Technology Center 2800

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Decided<sup>1</sup>: April 29, 2009

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Before KENNETH W. HAIRSTON, CARLA M. KRIVAK, and  
KARL D. EASTHOM *Administrative Patent Judges*.

KRIVAK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 1, 3-34, and 36-38.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

We affirm.

#### STATEMENT OF CASE

Appellant's claimed invention is a method and circuit for short term prediction of storm cells using a modified weather radar system in aircraft (Spec. 1:12-13). The method and circuit predict a coincidence of the flight path of a host aircraft with a predicted storm cell and alert the aircraft crew under predetermined conditions (Spec. 1:14-15). This modified weather aircraft radar detects and records the position, direction, and intensity of a weather condition, and tracks intensity information for forecasting a position and intensity of the weather condition at a time in the near future. The forecast is then displayed to the crew. (Spec. 11:20-27)

Independent claim 1, reproduced below, is representative of the subject matter on appeal.

Claim 1: A method for predicting the future state of a weather condition relative to an aircraft, the method comprising:

accessing a first weather radar image generated relative to the aircraft;

accessing a second weather radar image generated after said first weather radar image and having a similar relationship to the aircraft as said first weather radar image;

mapping said first weather radar image onto said second weather radar image;

comparing said first and second weather radar images;

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<sup>2</sup> The rejection against claim 35 was withdrawn in the Examiner's Answer (Ans. 13).

forecasting information describing a weather condition represented by said first and second weather radar images;

retrieving a phase of flight of the aircraft; and

generating a warning as a function of comparing said forecast information describing a weather condition and said phase of flight.

#### REFERENCES

Kuntman	US 5,077,558	Dec. 31, 1991
Frank	US 5,615,118	Mar. 25, 1997
Otsuka	US 5,974,360	Oct. 26, 1999

The Examiner rejected claims 1, 3-34, and 36-38 under 35 U.S.C. § 103(a) based upon the teachings of Otsuka, Frank, and Kuntman (Ans. 3).<sup>3</sup>

Appellant contends the Examiner is incorrect in the allegations that Otsuka can be modified in the manner of Frank to provide a pilot with a highly accurate forecast of a weather image so that the pilot can better choose appropriate action based on a forecast. Appellant also contends that the alert generated by Kuntman fails to remedy the deficiencies of Otsuka and Frank, and that Otsuka and Frank do not teach or suggest receiving a phase of flight of the aircraft and generating a warning as a function of comparing forecast information describing a weather condition and phase of flight (App. Br. 10).<sup>4</sup>

#### ISSUE

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<sup>3</sup> The Examiner's Answer mailed April 16, 2008, is the Answer referred to throughout this opinion.

<sup>4</sup> The Supplemental Appeal Brief filed February 11, 2008, is the Appeal Brief referred to throughout this opinion.

Did Appellant establish that the Examiner erred in combining Otsuka, Frank, and Kuntman?

#### FINDINGS OF FACT

1. In Appellant's invention, a conventional weather radar is modified to include a device for storing storm cell position and intensity data. Further, recorded information is used to predict the future course and intensity of a storm cell relative to the host aircraft (Spec. 12:18-21).

2. The weather incident prediction function of Appellant's invention communicates with an on-board flight management system to access the aircraft's intended flight path stored therein and compare it to a predicted future position of the storm cell. If the path of the storm cell and the aircraft's intended flight path coincide, an appropriate warning is issued. (Spec. 12:22-29; Spec. 14:13-17)

3. Otsuka teaches weather prediction where two weather radar images are measured at an arbitrary time interval. One of the images is shifted, the correlation value of the image gray level is calculated, and an amount of movement of a weather field is determined. The amount of movement is used to obtain a forecast image (col. 1, ll. 35-43).

4. Frank teaches an onboard flight path optimization system. The system includes an onboard performance management computer, temperature probe, weather radar, inertial navigation system, and comparing apparatus. The onboard performance management system constantly compares a remote variable, such as wind or temperature, and a respective local variable to provide an economical and safe flight path to a destination. (Col. 4, ll. 4-21)

5. Kuntman teaches an airborne wind shear detection weather radar. Wind shear detection can be incorporated as a mode of operation of the weather radar. During cruise, climb, and approach phases of a flight, the radar can be operated in any of its normal modes (col. 2, ll. 7-17). An alert is displayed by a display/alert (32, Fig. 2) and is generated any time a severe wind shear probability is detected (col. 4, ll. 27-29).

#### PRINCIPLES OF LAW

If the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness can be based on a showing that “there was an apparent reason to combine the known elements in the fashion claimed.” *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740, 1741 (2007). Such a showing requires

“some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” . . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

*Id.* at 1741 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

An improvement in the art is obvious if “it is likely the product not of innovation but of ordinary skill and common sense.” *KSR* at 1742.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so

doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). If the Examiner’s burden is met, the burden then shifts to Appellants to overcome the *prima facie* case with argument and/or evidence.

The scope of the claims in a patent application is determined not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction in light of the Specification as it would be interpreted by one of ordinary skill in the art. *In re Amer. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

The test for obviousness is what the combined teachings of the references would have suggested to the artisan. Accordingly, one can not show nonobviousness by attacking references individually where the rejection is based on a combination of references. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

## ANALYSIS

The Examiner rejected claims 1 and 3-38 under 35 U.S.C. § 103(a) based upon the teachings of Otsuka, Frank and Kuntman. Appellant addresses this rejection with respect to independent claims 1, 13, 20, 22, and 29, and separately with respect to dependent claims 3, 7, 11, 17, 27, 32, 35. With respect to the independent claims, although each claim appears to be argued separately, the arguments provided for each claim are substantially

the same. Thus, the rejection of the independent claims is addressed with respect to representative claim 1.

The Examiner finds that Otsuka teaches all the features of Appellant's claim 1 except for a weather radar resident on-board an aircraft and generating a warning reflecting a threat to safety as a function of flight path and phase of flight (Ans. 3-4). The Examiner then finds that Frank teaches that weather radar images are generated by an on-board weather radar and Kuntman teaches generating a warning reflecting a threat as a function of flight path and phase of flight (Ans. 4).

Appellant contends that Kuntman fails to remedy the deficiencies of Otsuka and Frank in that both fail to teach or suggest receiving a phase of flight of the aircraft and generating a warning as a function of comparing forecast information and phase of flight as claimed (App. Br. 10).

Appellant has not provided arguments with respect to the Examiner's use of Otsuka and Frank, but rather has argued that the Examiner is mistaken in interpreting the teachings of Kuntman, that Kuntman is not a proper reference, and that the "proposed modification cannot render the prior art unsatisfactory for its intended purpose" (*See* App. Br. 12-19). Appellant argues that Kuntman "only teaches that 'wind shear detection can be incorporated as a mode of operation of the weather radar and therefore could be activated during the landing and takeoff phases of flight'" (FF 5; App. Br. 12). Thus, Appellant asserts Kuntman teaches "only that wind shear detection can be turned on during critical phases of flight, and turned off during other phases of flight" (App. Br. 12).

Appellant's claims, however, refer to retrieving/accessing a phase of flight (cls. 1, 13, 20, 22, and 29). As the term "phase of flight" is not

defined in the Specification, giving this term its broadest definition as required by *In re Am. Acad. of Sci. Tech Ctr., supra.*, it is clear that this term covers both critical and non-critical phases of flight. Going even further, one could consider all phases of flight as critical. Thus, Appellant's argument is without merit. Further, Kuntman states that the weather radar *could* be activated during take off and landing phases of flight (emphasis added). It does not necessarily have to be activated during that time. Rather, Kuntman leaves open the option of activating the weather operation at a phase of flight other than takeoff and landing.

Appellant's assertion that Kuntman is an improper reference and actually teaches away (App. Br. 15) is also without merit. Appellant asserts that "Kuntman teaches disabling the weather radar during the landing and take off phases of flight" and then cites Kuntman, column 2, lines 7-17, which states the wind shear detection *could* be activated during landing and take off phases. This language does not suggest that Kuntman *must* disable the weather radar during take off and landing, only that it *could*. Thus, there is no teaching away.

Appellant asserts that "weather detection and wind shear detection are different and mutually exclusive operations of the weather radar" (App. Br. 16). Appellant further contends that "Kuntman does NOT tie generating an alert to phase of flight. Rather, Kuntman only ties generating an alert to if the wind shear detection mode of the radar is being operated" (App. Br. 17). However, as the Examiner states, Kuntman is cited only for the fact that it is known in the art to generate a warning reflecting a threat to safety as a function of flight path and phase of flight (Ans. 4, 9-10). Further, the Examiner is correct in finding that since an alert is generated in Kuntman

only when wind shear is detected and only when the device is in wind shear detection mode, and since the device is in detection mode during critical phases of flight, then Kuntman teaches generating a warning as a function of the weather condition and the phase of flight (Ans. 10).

Appellant's assertion that the proposed modification of Otsuka and Frank by Kuntman renders the prior art unsatisfactory for its intended purpose (App. Br. 19-20) is also unfounded. Appellant argues that substituting the operations of weather forecasting and wind shear detecting as taught by Kuntman would make the weather forecasting of Otsuka useless during critical phase of flight (App. Br. 19-20). Further Appellant urges this would also render Frank's performance management computer useless (FF 4; App. Br. 20). Neither of these allegations has merit. Appellant is merely attacking references individually where the rejection is based on a combination of references (*see In re Keller, supra.*). Thus, Appellant has not overcome the Examiner's *prima facie* case of obviousness over the collective teachings of Otsuka, Frank, and Kuntman.

Appellant separately argues dependent claims 3, 7, 11, 17, 27, 32, and 35.<sup>5</sup> With respect to claim 3, Appellant argues that none of the references teaches forecasting an intensity of a storm cell sufficient to threaten safety of flight and generating a warning as a function of a predicted intersection with the storm cell (App. Br. 20). However, Otsuka teaches forecasting weather based on a precipitation field using a gray scale, the darker the gray scale, the more severe the storm (FF 3). Issuing a warning when such a threat to safety is determined, is taught by Kuntman (FF 5). Further, even if a warning is not generated, a pilot will navigate away from any severe weather

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<sup>5</sup> As noted above, claim 35 is no longer before us and thus, is not addressed.

shown on the radar. Thus, claim 3 is obvious over the collective teachings of the cited references.

With respect to claim 7, the Examiner did address Appellant's contention that the references do not compare the intensity of the weather condition with the intended phase of flight at the coincidence (Ans. 12-13). As noted above in the arguments with respect to claim 1, Otsuka teaches employing a gray scale indicating the intensity of the weather condition (FF 3). Thus, for the reasons articulated by the Examiner (Ans. 12-13) and those set forth above, claim 7 is obvious over the collective teachings of the cited references.

With respect to claim 11, for the reasons set forth above with respect to claims 3 and 1, this claim is obvious over the collective teachings of the cited references.

With respect to claim 17, Appellant provides the same arguments as those provided for claim 11. Thus, claim 17 is obvious over the collective teachings of the cited references.

With respect to claim 27, Appellant provides the same arguments as those provided for claim 11. Thus, claim 27 is obvious over the collective teachings of the cited references.

With respect to claim 32, Appellant provides the same arguments as those provided for claim 11. Thus, claim 32 is obvious over the collective teachings of the cited references.

## CONCLUSION

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Application 10/823,951

Appellant has not established that the Examiner erred in rejecting claims 1, 3-34, and 36-38 under 35 U.S.C. § 103 over the collective teachings of Otsuka, Frank, and Kuntman.

#### DECISION

The Examiner's decision rejecting claims 1, 3-34, and 36-38 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

gvw

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